



CONCRETE FLOOR HARDNERS

CONCRETE WATERPROOFINGS

ALLIED TECHNICAL PRODUCTS



BRANCH OFFICES:

ATLANTA	625 Walton Bldg.	MILWAUKEE	774 Broadway
BOSTON	80 Boylston St.	MINNEAPOLIS	434 Builders Exchange
BUFFALO	203 McKinley Bldg.	NEW YORK	441 Lexington Ave.
CHICAGO	228 No. LaSalle St.	PHILADELPHIA	1105 Otis Bldg.
DALLAS	613 Construction Bldg.	PITTSBURGH	422 Fulton Bldg.
DENVER	California Bldg.	PORTLAND	61 Albina Ave.
DETROIT	606 Michigan Theatre Bldg.	ST. LOUIS	Star Bldg.
HELENA	Power Block Annex	SALT LAKE CITY	211 Kearns Bldg.
HOUSTON	1008 Post Dispatch Bldg.	SAN ANTONIO	503 Builders Exchange
INDIANAPOLIS	1021 Hume Mansur Bldg.	SAN FRANCISCO	206 Mills Bldg.
KANSAS CITY	419 Gloyd Bldg.	SEATTLE	314 Seneca St.
LOS ANGELES	1321 Comm'l Exchange Bldg.	WASHINGTON, D. C.	726 Investment Bldg.

The
MASTER BUILDERS CO.
Cleveland, Ohio

THE MASTER BUILDERS CO. BELIEVES

THAT THE ARCHITECT AND BUILDER ARE ENTITLED TO RECEIVE

THE BEST products that brains, money and research can produce.
THE FACTS about those products in terms of the Architect's and Client's interests.

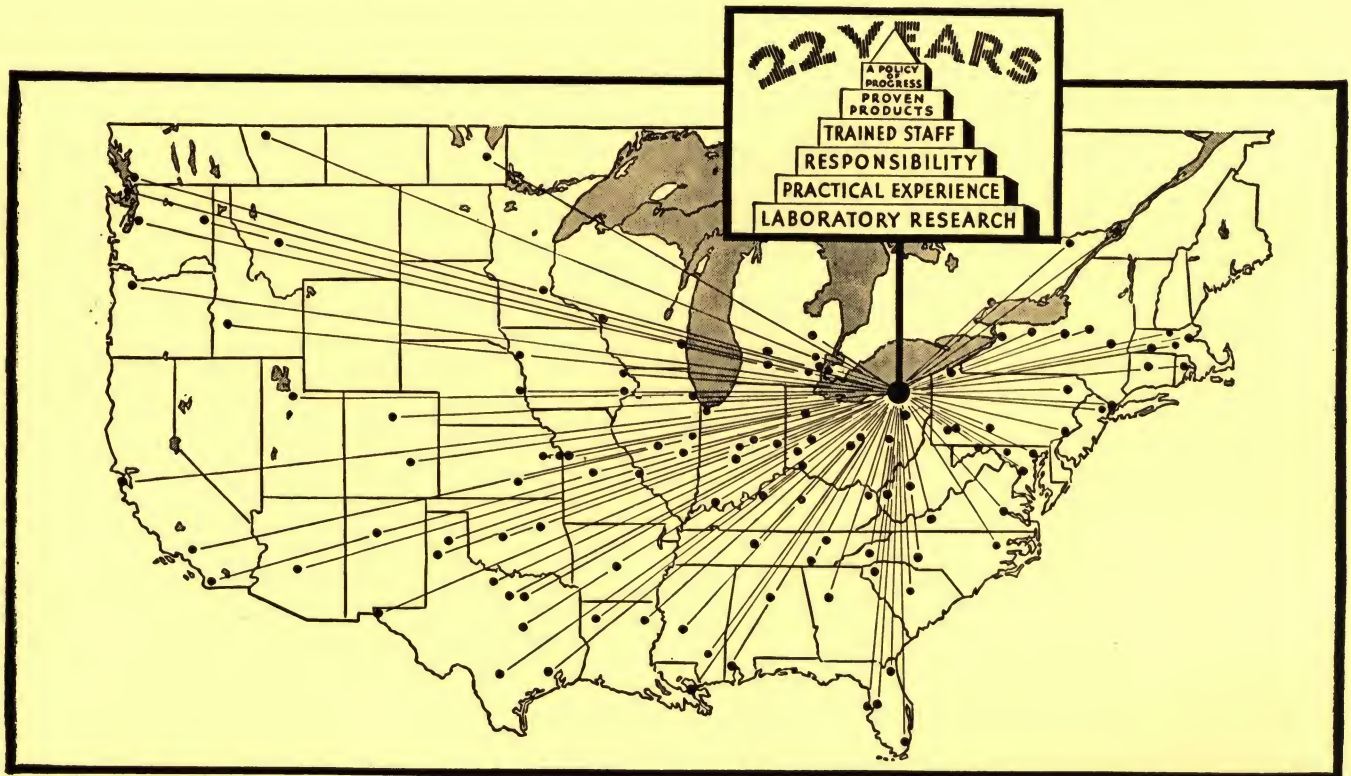
INTELLIGENT consulting and field service for the proper selection and use of products.

FULL COOPERATION before, during and after installation.

RESULTS . . . not promises.

THIS conception of our responsibility to the construction industry is the cornerstone on which The Master Builders Company was founded in 1910. To the support of these ideals for twenty-two years has been brought the best in brains, experience and integrity. During that period, over 600,000,000 sq. ft. of Masterbuilt Floors have been installed, giving us a breadth of experience unequalled in our field. That these policies will be maintained and the service program under them broadened as new and improved materials develop, is the promise of this organization to the building fraternity.

LEADERS IN THE CREATION OF NEW AND IMPROVED METHODS, WITH A NATION-WIDE ORGANIZATION OF CONCRETE SPECIALISTS TO SERVE YOU



THE MASTER BUILDERS COMPANY / CLEVELAND, OHIO



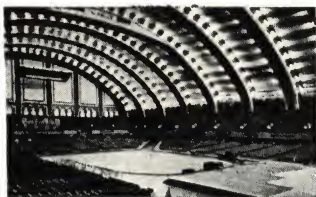
Masterbuilt Floors in National Landmarks



World's Largest Building
Merchandise Mart, Chicago
Graham, Anderson, Probst &
White, Architects
5,000,000 sq. ft. Masterbuilt Floors



World's Largest Hangar
Goodyear Zeppelin Hangar, Akron
Wilbur Watson and Assoc., Arch.
Masterbuilt Floors Throughout



World's Largest Auditorium
Convention Hall, Atlantic City
Lockwood, Greene & Co., Engineers



New York Edison Co., New York
Private Plans.

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HEAVY DUTY CONCRETE FLOOR HARDNERS.....4-5

All areas subject to heavy traffic—industrial, railroads, docks, machine shops, garages, foundries, steel mills, warehouses, metal stamping, textile,

paper, etc. METALICRON and METALLIC HARDNER recommended.

AVERAGE DUTY CONCRETE FLOOR HARDNERS.....6-7

Light industrial areas, office buildings, loft, hospitals, hotels, laundries, theatres, auditoriums and similar areas subject to heavy foot

traffic, light manufacturing, light trucking, etc. MASTER MIX and SANISEAL recommended.

COLORED CONCRETE FLOOR HARDNERS.....9, 10, 11-12

For offices, schools, hospitals, churches, loft buildings, clubs, theatres, store rooms, apartments, residences, power plants, etc. Three techniques available: COLORMIX

Colors and hardens topping throughout. COLORED METALICRON—dust coat method. DYCROME—stains and hardens after floors are installed.

PROTECTIVE AND DECORATIVE TREATMENT FOR MASONRY.....13-14

BRIKRON for minimizing efflorescence, waterproofing mortar joint and protecting joint from disintegration; MASTERTEX for decorating and protecting masonry; MASTER-

SEAL Colorless Waterproofing for waterproofing and protecting concrete and stone from cracking and spalling.

WATERPROOFINGS.....15-16

Complete data and specifications on Master Builders Waterproofings—Integral Liquid, Paste, and Powder;

Metallic (iron); Plaster Bond; Foundation Coating.

OMICRON—The exclusive differential in Master Builders products. See page.....8



The "Terminal Group"
Cleveland, Ohio
Graham, Anderson, Probst &
White, Architects



New York Central Building, N.Y.C.
Warren & Wetmore, Architects



FOR HEAVY DUTY

ON ALL AREAS SUBJECT TO HEAVY TRAFFIC
MACHINE SHOPS . . . GARAGES . . . FOUNDRIES
STAMPING . . . PRINTING . . . TEXTILE . . . PULP

specify METALICRON

DESCRIPTION: Metalicron is the modern application of the original Master Builders Metallic Hardner principle that has been recognized as a standard since 1910. Metalicron is a combination of Master Builders pure water absorbent Metallic Hardner plus OMICRON—the corrosion-resisting ingredient discovered by Master Builders Research Laboratories and an exclusive feature in Master Builders products.

TYPES OF CONSTRUCTION: Metalicron is distributed over and troweled into the surface of the freshly floated concrete floor by either of the following standard floor-finishing methods:

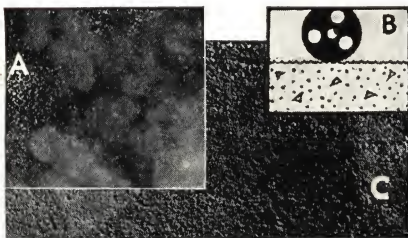
a. Finished Base Slab (often called "Monolithic Finish"): Immediately after leveling and floating the slab, a dry mixture of portland cement and Metalicron is distributed over the floor and floated in, followed by steel troweling.

b. Topping Type Floor: Separate top finish ($\frac{3}{4}$ " to 2") applied to either fresh or hardened base slab; a mixture of portland cement and Metalicron is distributed over the mortar surface and floated in, followed by steel troweling.

OMICRON: Metalicron is immediately distinguished from all other metallic type hardeners by its Omicron content. Omicron combines with portland cement to reduce the ratio of solubles in set concrete, thereby increasing not only the strength of the concrete but likewise its resistance to the disintegrating action of corrosive acid and alkali agents present to a greater or less degree on all floors.

WELL KNOWN: The Metalicron method is well known to the cement floor finishing trades; is recommended by foremost specialists; and may be specified with full assurance that proper use and successful results will be obtained.

Obtain These Advantages of



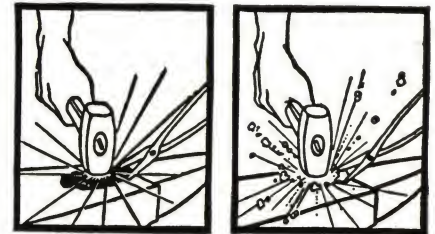
"A"—Photomicrograph of calcium hydroxide crystals, the soluble part of a concrete floor.
"B"—Illustrating how abrasion crushes or knocks loose aggregate exposed by corrosive etching.
"C"—Showing effect of corrosives on concrete floor. Aggregate exposed to abrasive wear.

It Protects From Corrosion

Practically all concrete floors are subject to action of corrosive agents. As portland cement hydrates certain soluble by-products are formed that remain inert in the concrete reducing strength and cementing value. These salts are soluble by corrosives—even in very mild form. Omicron—a discovery of Master Builders Research Laboratories—reacts with and reduces the ratio of these soluble salts, converting them into cementitious factors adding increased strength and full resistance to corrosive action. (For complete data on Omicron and its contribution to the life of concrete, see page 8.)

It Protects From Abrasion

Pound a piece of sand with a hammer—it crushes to powder because it is brittle. Pound a piece of iron—it dents but does not crush.



In a Metalicron floor subject to heavy traffic the same thing takes place. The ductile metallic aggregate which replaces the brittle sand gives but does not crush as sand does. This explains why Masterbuilt floors far outlive plain finish floors and require little or no repair.

TESTS OF METALICRON

Sea Water Tests—Nova Scotia Technical College, Halifax, N. S.

Mix—1 Portland Cement: 2 parts Ottawa Sand, for plain samples. 1 Portland Cement: 1 Ottawa Sand: 1 Metalicron, for Metalicron samples. Water cement ratio 1.13. Specimens submerged in Halifax harbor salt water.

Set No.		Days in Moist Air	Time in Salt Water	Tensile Stgth.	Com. Stgth.
1.	With Metalicron	7	none	428	3420
3.	Without Metalicron	7	none	321	2355
	Metalicron stronger than plain by			33%	45%
5.	With Metalicron	28	3 mo.	791	5910
6.	Without Metalicron	28	3 mo.	482	3770
	Metalicron stronger than plain by			64%	56%
7.	With Metalicron	28	2 mo.	723	5800
8.	Without Metalicron	28	2 mo.	499	3400
	Metalicron stronger than plain by			45%	70%

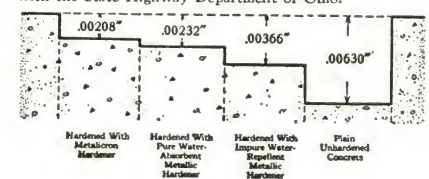
Pittsburgh Testing Lab. No. 65412

4" x 2" compression cylinders of 1:3 concrete, plain and treated with Metalicron were stored in water and in a corrosive solution of 10% sodium sulphate for periods given. Note comparative resistances to disintegrating action.

Pounds Per Sq. Inch in Compressive Strength				
Age Days	Stored in	Untreated	Metalicron	Increase
28	(Water)	3750	4280	14%
	(10% Sod. Sul.)	3500	4233	20.9%
	% loss from chemical attack	7%	1%	
60	(Water)	3653	4653	27.3%
	(10% Sod. Sul.)	2827	4563	61%
	% loss from chemical attack	22%	2%	
90	(Water)	3233	4857	50.2%
	(10% Sod. Sul.)	2437	4683	92%
	% loss from chemical attack	24%	4%	

Abrasive Tests

The graph below shows the relative depth of wear produced by abrasion on concrete slabs of different finishes and is based on tests made by A. B. Braden, Consulting Engineer with the State Highway Department of Ohio.



CONCRETE FLOORS

INDUSTRIAL . . . RAILROADS . . . DOCKS . . .
 . . . STEEL MILLS . . . WAREHOUSES . . . METAL
 PAPER AND ALL HEAVY MANUFACTURING.

for Double Protection

NON-SLIP METALICRON

This is standard Metalicron combined with special slip-proof aggregate, and designed for use on ramps, corridors, stairs, wet areas, etc., where non-slip finish is desired. Specifications as below, except say "Non-slip Metalicron."

METALLIC HARDNER

Master Builders Metallic Hardner is the original metallic hardner perfected by Master Builders Research Laboratories in 1910. Provides a durable wear resisting surface second only to Metalicron. Specification is the same except say "Metallic Hardner" rather than "Metalicron."

PACKED: Metalicron, Non-slip Metalicron and Metallic Hardner are packed in 100-lb. waterproof canvas bags sealed with Master Builders guarantee seal.

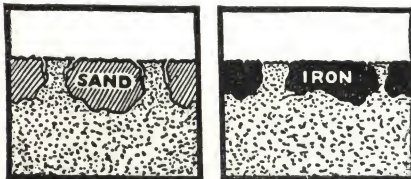
SPECIFICATION

All concrete floors in (here indicate specific area) shall be hardened with Master Builders Metalicron, using not less than (here insert "30 lbs." for heavy duty, "40 lbs." for extra heavy duty, or "50 lbs." for extremely heavy duty floors) for each 100 square feet of floor. These floors shall be finished according to the manufacturer's directions for (here insert "finished base slab" or "topping type") Metalicron floors.

Metalicron Protected Floors

Waterproofs and Greaseproofs a Floor

Besides being wearproof, Metalicron floors are positively waterproof. When troweled in to the floor the metallic particles oxidize slightly,



making the wearing finish impervious to water, oil or grease. Note the sketch above. Minute pores tend to separate the cement and inert sand aggregate. Where metallic aggregate is used, the oxidizing action expands sufficiently to fill these pores, further cementing the aggregate into the finish and creating a homogeneous, non-porous surface of great density.



Merchandise Mart, Chicago. World's largest building, 1,000,000 sq. ft. of Metalicron Floors, 4,000,000 sq. ft. of Master Mix Floors. Graham, Anderson, Probst and White, Architects.

Matches Standard Set By P. C. A.

The standard established by the Master Builders Research Laboratories for Metallic Hardner twenty-two years ago is confirmed by the Portland Cement Association in its book "Concrete Floor Finishes" which makes the following recommendations: "Metallic aggregates have been used successfully in the wearing surface of concrete floors. In selecting this material particular attention should be directed to proper grading, freedom from oil, grease, non-ferrous metals and other harmful impurities. *It should not be water-repellent.*"

Master Builders Metalicron and Metallic Hardner have always completely met the standards now recognized by the Association.



Water absorbency test. Master Builders Metalicron and Metallic Hardner are water absorbent as recommended by the Portland Cement Association.

WHAT INDUSTRIAL LEADERS SAY

E. I. DuPont de Nemours & Co.—" . . . all installations of Master Builders Metalicron have proven very satisfactory.

General Electric Co. (Canada) " . . . you may be sure that if the results are as good as we have had in the States, it will be a pleasure to specify your floors."

Pure Oil Co. (Refinery) " . . . Your letter regarding the Metalicron floor—this floor gets rather hard service and so far as I have been able to observe personally, and from reports submitted to me . . . no signs of pitting are observable."

Merchandise Mart, Chicago—" . . . after a careful investigation by our architects your floors were recommended to us and independent research on our part revealed that they were proving successful in other buildings. One of two tenants who have large stockroom areas took extra precautions to allay any latent dust common to cement floors but this varnish-like coating was applied only in very small portions and due to the density of your floors is now peeling off. We . . . feel very well repaid for the extra cost incurred through the adoption of your hardeners."

New England Dressed Meats Co. (Packing House) Somerville, Mass. "The Metalicron hardener which we used . . . gives us a very satisfactory floor."

Westinghouse Electric & Mfg. Co.—" . . . the floor is retaining its smooth, slatelike surface . . . should we install additional flooring in our plant, we would undoubtedly consider very seriously the use of Metalicron."

Viscose Co. (Cellulose) Parkersburg, W. Va.—" . . . regarding the service of our floors in which Master Builders Metalicron Hardener was used. We are pleased to report that these floors are very satisfactory."

Kay Brunner Steel Products, Inc.—" . . . in regard to the concrete floors installed in our Alhambra Foundry wherein Master Builders Metalicron Hardened Concrete was used. Wish to advise that your material has increased the hardness and life of our floors and at this writing we are pleased to advise that the floors are standing up very well under the very hard use which a foundry floor is given."



FOR AVERAGE-DUTY

ON LIGHT INDUSTRIAL AREAS . . . OFFICE BUILDINGS . . . LOFT BUILDINGS
AUDITORIUMS AND SIMILAR AREAS . . . SUBJECT TO HEAVY

specify MASTERMIX the

DESCRIPTION—Master Mix, integral liquid hardner which hardens, waterproofs and dustproofs concrete floor finish throughout its entire thickness, has been a standard for moderate-to-heavy duty service for over Fifteen Years.

OMICRON—Master Mix is distinguished from all other integral liquid floor hardeners by its basic hardening ingredient, Omicron. Discovery of Master Builders Research Laboratories, Omicron is an exclusive advantage obtained only in Master Builders products. In Master Mix it acts not only as a hardner and wearproofer but performs important additional functions of major value in floor construction. These functions are pictorially described below. Specifically, Omicron combines with portland cement to reduce the ratio of solubles in set concrete, thereby increasing not only the strength of the concrete but likewise its resistance to the disintegrating action of corrosive acid and

alkali agents present to a greater or less degree on all floors. For complete data on OMICRON see page 8.

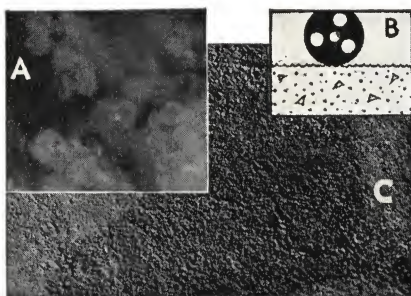
EASY TO USE. Throw a quart into the mixer for each bag of cement in the batch.

APPROXIMATE COST. Approximate cost per inch of finish . . . one cent per sq. ft.

► SPECIFICATION—*Light Commercial Traffic*

All concrete floor finish as designated shall consist of one part standard Portland Cement and two parts clean, graded, sharp sand, and shall be hardened with Master Builders Master Mix used in the proportions of one quart of Master Mix for every bag of cement mixed. The Master Mix shall be added to the gauging water, or shall be thrown directly

Obtain these Advantages



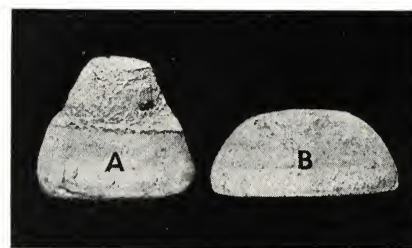
"A" Photomicrograph of calcium hydroxide crystals. "B" Showing how corrosive etching exposes brittle aggregate to abrasion. "C" Floor etched by mild corrosives.

It Protects From Corrosion

Authorities state that from 7 to 17 lbs. soluble calcium hydroxide (free lime) are formed in the hydration of each hundred pounds of portland cement. This calcium hydroxide is the most soluble part of concrete and will dissolve out when in contact with corrosives—even those in very mild form. Corrosive agents—present in smoke and fume deposits, strong cleaning powders, etc., attack those soluble salts pitting and etching the surface and leaving the sand exposed to abrasive wear. The Omicron base of Master Mix guards a floor against this corrosive etching by making the most soluble part of the floor as insoluble as the rest of the concrete mass. Note corrosive tests in lower left corner. (For complete data on OMICRON see page 8.)

It Permits Low Water/Cement Ratio

Low water/cement ratios of 4 or 5 gallons of water per bag of cement produce stronger, denser floor finish than where 7 or 8 gallon ratios are used. However, low water ratios make harsh, unworkable finishes—are often considered impractical by the contractor as they slow up the job and increase costs. This results in the use of much sloppy mortar, leading to segregation of aggregate and weak, dusty floors. Master Mix—due to the high lubricating action of Omicron—meets this situation squarely, actually discouraging the use of excess water by producing an ideal mortar with low water ratio.



Slump test above shows how Master Mix increases workability. Both slumps have the same water/cement ratio of 4 3/4 gallons of liquid per bag of cement. Both contain the same sand and cement mix. Slump "A" (with a 4-inch slump) contains no admixture. Slump "B" (with 8-inch slump) contains 4 1/4 gallons of water and 1/2 gallon of Master Mix. This increased workability contributed by Master Mix makes low water/cement ratio mixes easy to place and finish—automatically makes sure that low water/cement ratios will be used

TESTS OF MASTERMIX

CORROSION TESTS

Pittsburgh Testing Lab. No. 65412

Compression Strength Pounds per Square Inch	21 Days in 10% Sol. Sodium Sulphate	60 Days in 10% Sol. Sodium Sulphate
1:3 Concrete		
Untreated	3750	3500
With Master Mix	3963	4066

STRENGTH TESTS

Pittsburgh Testing Lab. No. 62951

Compression Strength Pounds per Square Inch	Untreated	Master Mix	Per Cent Increase
Age			
7 days	3683	4220	14.6%
28 days	6047	6810	12.6%

Tensile Strength
Pounds per Sq. In.

Age	Untreated	Master Mix	Per Cent Increase
7 days	490	568	15.9%
28 days	603	692	14.7%
90 days	655	722	10.2%
365 days	688	815	18.4%

ABRASIVE TESTS

Columbus Testing Laboratories, Columbus, Ohio

Relative depth of wear on concrete slabs treated and untreated, cured 28 days, measured after six hours of constant abrasion:

Master Mix00452"
Untreated 1:200748"



CONCRETE FLOORS

... HOSPITALS ... HOTELS ... LAUNDRIES ... THEATRES ...
FOOT TRAFFIC ... LIGHT MANUFACTURING ... LIGHT TRUCKING ... ETC.

integral Omicron hardner

into the mixer. The finish mortar shall be placed, finished and protected in accordance with directions of The Master Builders Company, Cleveland.

► SPECIFICATION—Heavy Commercial Traffic

All concrete floor finish as designated shall consist of one part standard Portland Cement, one part clean, graded, gritty sand and two parts clean, hard pea gravel or crushed stone graded in size up to one-quarter inch. Floors shall be hardened with Master Builders Master Mix, used in the proportion of one quart of Master Mix per sack of cement. The Master Mix shall be added to the gauging water, or shall be thrown directly into the mixer. The finish mortar shall be placed, finished and protected in accordance with directions of The Master Builders Co., Cleveland.

FOR FLOORS ALREADY INSTALLED *specify SANISEAL*

Master Builders Saniseal is a powerful chemical hardner which, when mixed with water and brushed into the floor surface, deposits a hard, wear-resisting crystal in each pore of the floor. This arrests dusting and hardens the surface.

Saniseal is designed as a maintenance or corrective treatment for floors already installed. Because such hardners are effective only at the surface, it is not as efficient or economical as Mastermix, which hardens through full finish and which is therefore to be preferred when specifying for new floors.

► SPECIFICATION—All cement finish floors shall be hardened and dust-proofed by an application of Master Builders Saniseal, using not less than two pounds of Saniseal per 100 sq. ft. and applied according to the directions of the manufacturer, The Master Builders Co., Cleveland.

o f M A S T E R M I X

Adds Permanent Strength

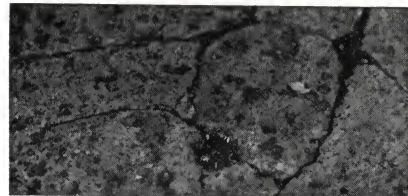
Master Mix adds from 10 to 18 per cent additional strength to floor finish over and above that added by the low water/cement ratio. This strength is permanent. The claim is sometimes made that integral hardeners merely accelerate the set and give quick strength but no additional permanent strength. Although this contention is probably true in the case of hardeners having chemical accelerators as the basic hardening ingredient—it is not apropos in the case of Master Mix as its basic hardening ingredient is Omicron which adds permanent strength by forming additional cement-like products in the concrete. Note tests in lower left corner.

Partial List of Installations

Merchandise Mart, Chicago.
C. B. Ragland Company Warehouse, Nashville, Tenn.
Advance-Rumley Bldg., Dallas, Texas.
Fountain City Dairy Co., Fond du Lac, Wis.
Kohler Co., Kohler, Wis.
County Safety Bldg., Milwaukee, Wis.
Carnation Milk Prod. Co., Oconomowoc, Wis.
New York Central Bldg., New York City
New York Tribune Bldg., New York City
Pershing Square Bldg., New York City
Saks Fifth Ave. Store, New York City
Cleveland Union Terminal Bldg., Cleveland, Ohio
American Insurance Union Bldg., Columbus, Ohio
Fox Theatre Bldg., Philadelphia, Pa.
Gimbel Bros. Co., Philadelphia, Pa.
Fisk Tire Bldg., Los Angeles, Cal.
Atlanta-Biltmore Hotel, Atlanta, Ga.
Field Museum, Chicago, Ill.
Parke Davis Co., Detroit, Mich.
Union Station, Chicago, Ill.
Illinois Merchants Bank Bldg., Chicago, Ill.
Harvard School of Business, Cambridge, Mass.
Paige-Detroit Motor Co., Detroit, Mich.
Kalamazoo Paper Mills, Kalamazoo, Mich.
Firestone Tire Co., St. Louis, Mo.
Dold Packing Co., Successors to Skinner Packing Co., Omaha, Neb.
Pittsburgh Plate Glass Co., Newark, N. J.

Waterproofs—Protects From Cracking

Alternate wetting and drying, freezing and thawing, and calcium hydroxide crystal pressure are principal causes of crazing and cracking of concrete floors exposed to the elements. (See picture below.) To protect floor finish from this action it is necessary to make it impervious to water infiltration and reduce crystal formation.



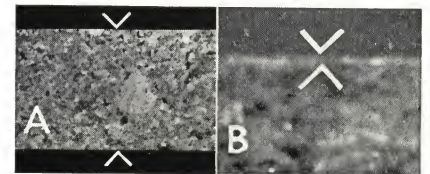
Master Mix effectively densifies and waterproofs cement finish and reduces possibility of crystal pressure due to the action of Omicron. Consequently Master Mix protects floor finish from cracking due to these causes.

The waterproofing quality of Master Mix is also of advantage for basement floors, for floors in direct contact with the ground and for preventing lingering dampness after scrubbing.



Presbyterian Hospital Group
New York City
James Gamble Rogers,
Architect

It Hardens Throughout Topping



Strength is built into a Master Mix Floor. It is hardened throughout the entire wearing finish. Such a floor retains its slate-like surface, keeps its smooth, new appearance for years. This is in marked contrast to surface hardening treatments which merely crystallize the surface to a depth of approximately 1-48th of an inch.

"A" Hardened throughout by Master Mix. Note the dense, non-segregated appearance of this cross section of topping.

"B" Hardened by a surface dustproof 1-48-in deep. When top skin wears off, hardening effect disappears.

Protects Linoleum

Due to the action of its basic ingredient—Omicron, Master Mix nullifies the action of lime salts on the adhesive used for bonding soft coverings to a concrete floor and thus provides a firm bond between the two.

Where the soft covering is properly laid, loose bond—with attendant waves and wrinkles—will not develop on a Master Mix floor.



Advantages of OMICRON

PERMITS LOW W/C RATIO



Slump tests. Slump "B" (containing the Omicron admixture, Master Mix) is 4 in. greater than slump "A". Water/cement ratio same. Same mixes.

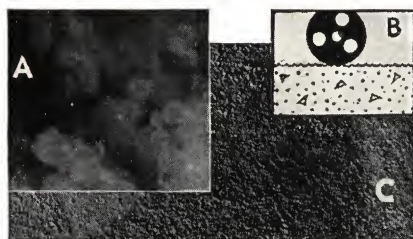
PERMANENTLY INCREASES STRENGTH

Robert W. Hunt Testing Laboratory, Pittsburgh.

Compressive Strength in lbs. per sq. in.

Age	Untreated	Plus Omicron	Per Cent Increase
1 day	188	565	200%
3 days	1557	1823	17%
7 "	2295	2775	20.9%
28 "	2909	3587	23.3%

ARRESTS CORROSIVE ETCHING



"A"—Photomicrograph of calcium hydroxide crystals—the vulnerable part of concrete. Mild acids and alkalis can readily dissolve such salts out of the floor and open it up to abrasive wear.

"B"—Illustrating how corrosive etching accelerates abrasive wear by exposing the brittle aggregate to be crushed or knocked loose.

"C"—Concrete floor etched by cleaning solutions, smoke and fume deposits.

Pittsburgh Testing Laboratory. Compressive Specimens in 10% Sodium Sulphate.

	Untreated	Plus Omicron	Greater Strength with Omicron
28 days in water	3750	4487	19.6%
21 days in sod. sul.	3500	4400	25.7%
Loss from corrosion	8.8%	1.3%	

PROTECTS COLORS



"A"—How black interspersed with white turns gray. "B"—A black unadulterated by white. Same thing takes place when soluble salts come to surface of colored concrete—Omicron arrests this action after floors are in use.

OMICRON

... The Exclusive Differential in MASTER BUILDERS PRODUCTS Serves Five Useful Functions in Cement Mixes!

OOMICRON discovered in Master Builders Research Laboratories — is the exclusive basic ingredient that distinguishes Master Builders Hardners and waterproofing from all others.

Omicron combines with portland cement to reduce the ratio of solubles in set concrete, thereby adding strength, permanence and corrosion resistance to concrete.

» LOW WATER/CEMENT RATIOS PRACTICAL WITH OMICRON

Low water/cement ratios of from $4\frac{1}{2}$ to 5 gallons of water to a bag of cement are recommended by the Portland Cement Association for strength. Such ratios produce harsh, unworkable mixes which tend to slow up placing and finishing operations. To meet this condition, contractors tend to increase the amount of water used. While floors laid with concrete mixed 7 or 8 gallons of water to the bag of cement may look good at first, the strength is not there and failure results.

By specifying an Omicron-containing hardner you can make sure that a low water/cement ratio will be used. For Omicron provides the necessary plasticity for finishing without the addition of excess water. Omicron lubricates the entire mix, making it easy to place and finish.

» OMICRON PERMANENTLY INCREASES STRENGTH

The test at left is selected from many which confirm the fact that Omicron permanently increases the strength of concrete. Complete test reports will be furnished upon request.

» OMICRON CHECKS CORROSIVE ETCHING

From 7 to 17% of Calcium hydroxide is thrown off by portland cement during hydration. This salt is readily soluble. Dissolution is rapid in 10% acid or alkali solutions, slower in solutions of less strength. It has been identified by authorities as the most vulnerable (to corrosion) part of concrete.

Corrosive agents are present on all areas: actively in industrial plants in the form of grease, oils, fats, acids and alkalis; mildly in other areas in the form of smoke and fume deposits, alkalis in soaps and cleansing powders. Corrosive agents attack the waste solubles in cement, etching them away and intensifying the destructive action of abrasion.

By largely eliminating the presence of waste solubles in concrete and replacing them with corrosive-resistant compounds, Omicron checks corrosive etching and disintegration, adding substantially to the life expectancy of the floor. See test at left.

» OMICRON INCREASES DENSITY AND WATER TIGHTNESS

The practical use of a low water-cement ratio permitted with Omicron decreases porosity by decreasing the amount of water to be evaporated. The high plasticity assured with Omicron permits more thorough troweling and the added Omicron-cement-like products increase density. These factors combine to give a dense, slate-like finish that is watertight.

» OMICRON PROTECTS COLORS

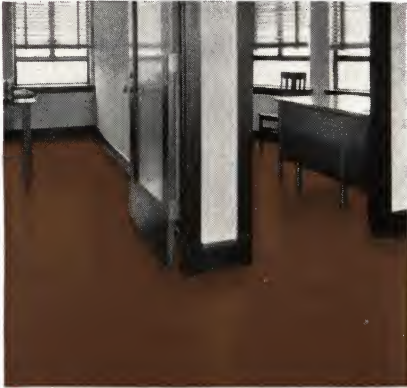
The staining and clouding of colors in concrete floors after they have been in use for a time is caused by the deposit of lime salts on the floor surface by efflorescent action. By largely eliminating the presence of soluble salts, Omicron definitely checks color clouding at its source, and keeps the floor color bright and free of these blemishes.

» RECOGNITION OF OMICRON'S VALUE

The Omicron principle has been fully proved in laboratory and field tests. Well over 43,000,000 square feet of floors are now receiving the double protection that Omicron alone can give. In Omicron, Master Builders offers another major result of the comprehensive research and product-development service that it has rendered to the building industry since 1910.



Save
ON THESE AREAS



General area in office building. This year a lawyer's office. Next year the quarters for a sales organization, photographer's studio, advertising agency, etc. A Colored Masterbuilt Floor appropriate for all. Floors made ready for new tenants at minimum cost to building owner or lessee.



Store basement space is valuable sales space. A Colored Masterbuilt Floor provides the proper background, durability waterproofness needed on such areas. Maximum beauty at minimum cost.



Loft space. Colored Masterbuilt Floors save cost of painting and repainting such areas and increase rentability and saleability of the building.

COLORED MASTERBUILT FLOORS

Increase a Building's Income

THE cancer of annual floor painting costs has for years eaten into the income from buildings and has been looked on as an incurable disease. Most owners and renting agents, because of their lack of information for combatting the disease, have ceased to concern themselves with it and have not even troubled to segregate the costs of painting floors, feeling "what's the use." These costs have been bulked with wall and ceiling painting and general decorative costs.

» TYPICAL EXAMPLE

An extensive survey made for The Master Builders Company discloses what a serious drain on income is represented in the cost of painting concrete floors. One nationally-known office building of the highest class incurs a cost of \$8,750.00 annually for painting floors in rented areas—an average of one cent per square foot annual expense for the entire rentable area of the building.

This annual penalty of \$8,750.00 could have been saved many times over if the facts—now available—had been placed in the builders' hands before the floor specifications were written.

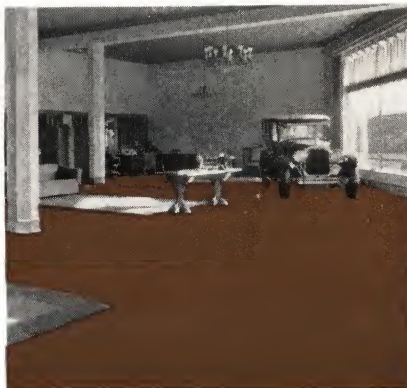
» SAVE UP TO 55¢ PER SQUARE FOOT BY BUILDING COLOR AND HARDNER INTO FLOORS

Plain cement finish floors are a permanent expense. They must be painted annually (or oftener if appearance values are of a major importance) at an average cost of three cents per square foot—or sixty cents a square foot over a twenty-year period.

By building color into concrete floors when laid, this expense can be eliminated. Even where various areas are covered, the economy effected is of major importance.

» NEW ECONOMY AND BEAUTY FOR CONCRETE FLOORS IN ALL TYPES OF BUILDINGS

The Master Builders Company has perfected methods and materials that make these savings available in all types of buildings. They produce new floor beauty and eliminate the year after year cost of painting. Before completing your plans, *get the details as they apply to your project.* We will be glad to submit conclusive cost data for the building you are now planning, giving you in advance a clear picture of the savings possible.



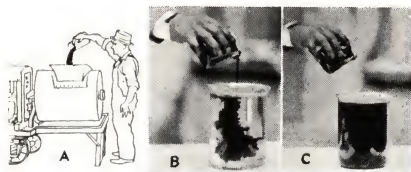
Store space. This year an automobile agency. Next year a five and ten or a drug store. Durable Colored Masterbuilt Floors suitable for any type of occupant. Escapes the inconvenience and expense of frequent repainting.



Even on areas that are not rented, Colored Masterbuilt Floors economize. By specifying built-in color, annual painting of service areas is eliminated.



Advantages of LIQUID COLORMIX

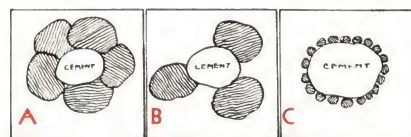


A—EASY TO USE

No weighing or dissolving necessary. Merely throw a gallon in the mixer for each bag of cement. Guesswork eliminated. Uniform mix assured.

B, C—INSTANTANEOUS DISPERSION

Because of its liquid form and the colloidal nature of its constituents, Colormix is dispersed instantly throughout the mix. Note illustration—there is no settling at bottom.



PULVERIZED COLORS—COMPLETE COVERAGE

"A"—cement particle completely coated with commercial size color oxide. If this amount of color is used, floor is greatly weakened. "B"—amount of commercial size color possible to use without injury to floor. Will not produce a deep color, as it does not give complete coverage. "C"—how pulverizing color particles permits complete coating of cement with a minimum of color. Deep color secured. Color Oxides used in Colormix are many times finer than Portland cement.



PROTECTED FROM CLOUDING

White lime salts brought to surface by moisture evaporation fade colors as in "A." The Omicron content of Colormix arrests lime salt formation and protects original color as in "B."



PERMITS LOW WATER-CEMENT RATIO

Because of its unusual lubricating effect Colormix makes possible low water-cement ratio and consequent increased strength. Illustration shows Colormix mortar "A" has 2-inch greater slump than plain mortar "B." Same mix and water-cement ratio in each.

STRONGER THAN PLAIN CEMENT

Tests below show Colormix Floors stronger than plain, uncolored floors. Same water-cement ratio and mix used in all. Increased strength of Colormix due to its Omicron basic hardening ingredient. See page 8 for data on Omicron.

Compressive Strength in Pounds

	3 days	7 days	28 days
Plain	1262	1961	2619
Red Colormix	2290	3212	4422
B. S. Gray Colormix	1622	2004	3530
French Gray Colormix	1305	2258	3562
Black Colormix	1527	2132	3115
Brown Colormix	1558	2386	4040
Blue Colormix	1558	2482	3690
Green Colormix	1654	2800	4134

TO COLOR *and* HARDEN A FLOOR THROUGHOUT TOPPING *specify* **COLORMIX**

COLORMIX represents the most complete and perfect method yet devised for building colored concrete floors with a deep, lasting beauty—colored, hardened and waterproofed throughout the entire thickness of the topping.

» NEW DEVELOPMENT—LIQUID FORM

The liquid form of Colormix is a sweeping advance in the field of integral colored floor hardeners. Through this most recent improvement Master Builders Research Laboratories have in one compound combined the following exclusive advantages:

Use Simplified—Results Sure. Merely add a gallon of the liquid Colormix to the mix for each bag of cement used. The difficulty and expense of weighing paste of dry hardeners—with attendant likelihood of non-uniform batches—is eliminated.

Coloring Strength Intensified—Complete Coverage Obtained. Due to a new process, color oxides used in Colormix are pulverized many times finer than portland cement. With this degree of particle fineness, complete coverage of cement particles with a deeper color can be obtained without endangering the strength or wearing quality of the floor. By the same process, colors are made brighter and freed of sulphates and other appearance-destroying minerals found in oxides in raw form. See illustration at left for principle of complete coverage.

Omicron. As in all Master Builders integral hardeners, Omicron hardener is the basic hardening ingredient. In Colormix, Omicron performs the following functions: (1) Hardens the floor, making it more wear-resistant than plain cement finish. (2) Densifies and waterproofs the floor. (3) Protects floor from clouding due to soluble salts being brought to the surface by moisture evaporation. (4) Permits the use of a low water-cement ratio by providing greatly increased workability. For complete details see page 8 on Omicron.

SPECIFICATION

All concrete floor topping as indicated shall be colored and hardened with Master Builders Colormix, using one gallon for each bag of cement in the mix, and following the manufacturer's detailed directions. Just before the floor is turned over for use, it shall be given a treatment with (here insert "Colorwax" or "Coloroil").

Colors Available. Tile Red, Persian Red, Maroon, Russet Brown, Seal Brown, Battleship Gray, French Gray, Terra Cotta, Green, Blue and Black.

Quantities Required. One gallon of Colormix, regardless of color, is required for each bag of cement in the mix. Estimate 4 gallons of Colormix for each 100 square feet of one-inch topping. Packed in 60, 40, 20, 8 and 4-gallon steel containers. Complete directions for use are attached.

Stainproof Protective Paper. With each order of Colormix, sufficient Stainproof Paper is supplied to cover and protect the floor until ready for use.

Colorwax or Coloroil Finish. Colormix Floors, finished with either Colorwax or Coloroil, develop a deeper color, with a glossy, protective finish that gives a linoleum-like feel under foot. Use Colorwax for interiors. Use Coloroil for exteriors subject to the elements.

SUGGESTED PATTERNS

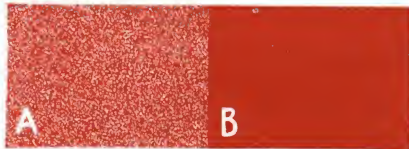


Advantages of COLORED METALICRON



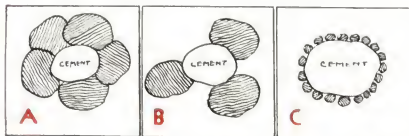
EASY TO USE

Colored Metalicron is scattered over a freshly floated floor, floated in and given two steel trowellings. Method well known to finishers.



PROTECTED FROM CLOUDING

White lime salts brought to surface by evaporation fade colors as in "A." The Omicron content of Colored Metalicron arrests lime salt formation and protects original color.



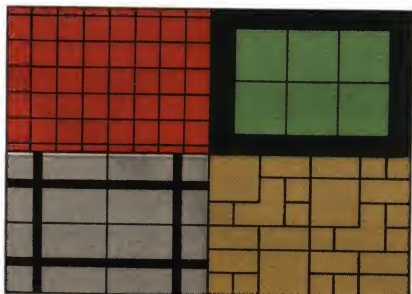
PULVERIZED COLOR—COMPLETE COVERAGE

"A"—cement particle completely coated with commercial size color oxide. If this amount of color is used, floor is greatly weakened. "B"—amount of commercial size color possible to use without injury to floor. Will not produce a deep color, as it does not give complete coverage. "C"—how pulverizing color particles permits coating of cement with a minimum of color. Deep color secured. Color Oxides used in Colored Metalicron are many times finer than Portland Cement.

HARDER THAN PLAIN FINISH

Colored Metalicron Floors are harder than plain cement finish, despite the fact that color is used. This is due in part to the great density and added compressive strength which the Omicron ingredient imparts and in part to the hard, specially-graded aggregate content of Colored Metalicron.

EFFECTS POSSIBLE



TO COLOR *and* HARDEN A FLOOR BY DUST-COAT METHOD *specify* **COLORED METALICRON**

COLORED METALICRON is a compound of superfine oxide colors, Omicron hardener and tough, wear-resisting aggregate. When mixed with Portland cement and trowelled into a freshly-floated concrete floor, it produces an attractively-colored wearing surface, slatelike in smoothness, wearproofed and waterproofed.

Tested and proved by years of use, this method of coloring concrete floors possesses these three most modern advantages:

» OMICRON

As in all Master Builders integral hardeners, Omicron hardener is the basic hardening ingredient (see page 8 for complete details, tests, etc.) In Colored Metalicron, Omicron performs the following functions: 1) Hardens the floor finish so that it tests more wear resistant than plain cement finish. 2) Densifies and waterproofs the floor. 3) Makes floor resistant to corrosive etching of mild acid and alkali deposits from smoke, fumes and strong, cleaning powders. 4) Protects the floor from clouding due to soluble salts being brought to the surface by moisture evaporation. 5) So increases workability of mortar that hardener is easy to trowel in even when a low water-cement ratio is used.

WHEN RECOMMENDED

Colored Metalicron is recommended for areas where low cost is a major requisite. Also in cases where topping is omitted, the base slab being finished off as a wearing surface.

For two other techniques of coloring and hardening concrete floors, see Color-mix and Dycrome pages.

» PULVERIZED OXIDES—COMPLETE COVERAGE

To secure a satisfactory, bright color in a floor, cement particles must be completely coated with color. Commercial oxides are about the same size as portland cement—too large to permit complete coverage of cement particles without the use of excessive amounts which, in turn, will weaken the wearing quality of the floor.

Through a special pulverizing process, the color oxides in Colored Metalicron are rendered many times finer than portland cement—complete coverage is obtained with a minimum of color oxide. By the same process, colors are made brighter and freed of sulphates and other minerals detrimental to lasting colors. See illustration at left for data on the principle of complete coverage.

» WEAR-RESISTING AGGREGATE

In Colored Metalicron, there is incorporated carefully-graded, tough, wear-resisting aggregate particles that add greatly to the abrasive resistiveness of the finished floor. See tests below by Herron Laboratories.

SPECIFICATION

All cement floors in (here indicate specific areas), shall be colored and hardened with Master Builders Colored Metalicron, following the directions of the manufacturer and using not less than 30 lbs. of Colored Metalicron per 100 square feet of floor.

Colors Available—Tile Red, Persian Red, Russet and Seal Brown, Terra Cotta, French and Battleship Grey, Black, Blue, Green. In 100-lb. Canvas Bags.

NON-SLIP COLORED METALICRON

This is Colored Metalicron combined with special slip-proof aggregate, and designed for use on ramps, corridors, stairs, wet areas, etc., where non-slip finish is desired. Specification same, except say "non-slip Colored Metalicron."

ABRASION TEST BY JAMES H. HERRON COMPANY

Testing Engineers and Chemists Cleveland, Ohio

Relative Depth of Wear Produced by Abrasion—Plain and Colored Mortars

Plain			Colored Metalicron—
Miscellaneous Pigments—Red	.00138"	Red	.00040"
Brown	.00307"	Seal Brown	.00074"
Green	.00243"	Battleship Gray	.00071"
Blue	.00235"	Black	.00034"
Black	.00266"		
	.00283"		



DYCROME

by chemical reaction with cement
HARDENS and COLORS *with a*
variety of lasting, interesting tints

Dycrome floor in the
sales room of the Pack-
ard Motor Car Com-
pany, of New York.

ALBERT KAHN
Architect



FLOOR BEAUTY of unusual character achieved through the use of soft, harmonious Dycrome colors has proven of exceptional value to architects striving for the unique in decorative effects. Dycrome, product of Master Builders Research Laboratories, provides the technique to color and harden concrete floors after they have been built. Applied to a surface after it is cured, Dycrome produces a great variety of interesting shades of blue, green and brown, at the same time rendering the floor hard and dustproof.

Advantages of **DYCROME**

» Applied after floor is built. » Produces variety of colors obtainable by no other method. » Hardens as well as colors. » Colors may be combined into a duo-tone effect.

PARTIAL LIST OF INSTALLATIONS

Convention Hall, Atlantic City, N. J.
Severance Music Hall, Cleveland, Ohio.
General Motors Sales Rooms, Los Angeles, Cal.
Lincoln Motors Co., San Diego, Cal.
Mack Motor Co., Albany, N. Y.
Walker & Weeks (Architects) Office, Cleveland, Ohio.
Oakwood Club, Cleveland, Ohio.
Y.M.C.A.—Middletown, Conn.; St. Petersburg, Fla.; Evanston, Ill.; Portland, Me.; Norwalk, Conn.
Dormitory, Bethany College, Bethany, W. Va.
First Baptist Church, Cleveland, Ohio.
Chagrin Valley Hunt Club, Chagrin Valley, O.
Dartmouth College, Hanover, N. H.
La Fonda Hotel, Santa Fe, New Mexico.
Tudor City, New York City.

COLOR RANGE. The Dycrome method makes it possible to plan interior effects after the floors are in and the decorative scheme determined. Colors include Flemish Oak, Weathered Bronze, Cordovan Brown, Palmetto Green, Nile Green and Jade.

Many attractive combinations of these colors are possible. The blending of green and brown into cloudlike variations suggests the harmony of an autumn hillside. Floors scored in tile-like squares or to modernistic design may have adjoining areas treated separately to effect novel geometric patterns. The final oil or wax finish applied when the desired color is developed, provides a smooth, hard, wear-resisting, easily-cleaned surface.

Dycrome is applied by The Master Builders Service, Inc., an organization expert in this type of treatment.

» **SPECIFICATION.** All cement finish floors in (here indicate specific areas), shall be colored and hardened with the Master Builders' Dycrome Method as applied by the Master Builders Service, Inc., or their authorized representatives. Cement mortar for such floors shall consist of a mix of one part cement to two parts sand to which shall be added two pounds of hydrated lime for each bag of cement in the mix. Floors shall be turned over to the Master Builders Service, Inc., properly cured and in a clean and stainfree condition.



PROTECTION—DECORATION OF MASONRY



Mastertex contains no volatile elements such as glue, casein, oil or other ingredients that deteriorate when subjected to sun and rain and cause paints to peel and flake off. Left—example of peeling. Right—Mastertex after years of wear on Mothers' and Babies' Hospital, St. Louis.



Stone structures such as these should be waterproofed and protected from corrosive attacks of smoke and fume deposits by Masterseal. Also protects from cracking and spalling due to alternate wetting and drying out, freezing and thawing.

MASTERTEX

Waterproof Cement Paint in Colors

MASTERTEX is a specially designed coating for waterproofing and decorating portland cement stucco, brick, stone, and other masonry. As it contains no volatile elements, such as glue, casein, oil, etc., Mastertex will not blister, flake, or peel off once properly applied. Unlike oil paints, Mastertex is applied to wet surfaces. Colors are light green, blue, brick red, ivory, cream, pink, brown, light gray, French gray, dark gray and white. Covering capacity—ten pounds in $3\frac{1}{2}$ to 4 quarts of water will cover 250 to 300 sq. ft. one coat or from 150 to 200 sq. ft. two coats. May be sprayed or brushed on.

MERITS AND ADVANTAGES: Mastertex has the following advantages: (1) Decorates and waterproofs a surface. (2) Protects surface from cracking and spalling due to alternate wetting and drying out. (3) Contains Omicron which, through its action on the soluble salts, protects the coating from attacks by acids and alkalis from the atmosphere. (4) May be used in place of the last stucco coat. (5) May be used on either exterior or interior surfaces in place of plaster. (6) It will not rub or brush off when applied according to specifications. (7) Original colors are protected from lime salt action by Omicron. (8) May be applied to damp concrete walls as soon as the forms are down. (9) Is applied to wet surfaces and consequently is an excellent material for dampproofing basement walls.

WHERE USED: Waterproofs, decorates and protects brick, stucco and stone buildings and any exposed masonry such as concrete swimming pools, bridges, abutments, retaining walls, etc. Excellent for dampproofing basement walls and as an industrial "inside white" where walls and ceilings are subjected to moisture and fumes containing mild acids and alkalis.

► **SPECIFICATION:** All surfaces of (here indicate areas) shall be waterproofed and decorated with Mastertex applied in accordance with the detailed directions of the manufacturers, The Master Builders Company, Cleveland.

MASTERSEAL

Transparent Surface Waterproofing

MASTERSEAL is a transparent liquid for waterproofing the exposed surfaces of brick, stone, stucco and concrete. It is applied like paint with either brush or spray gun and fills the surface pores with a time defying water repellent substance. Masterseal is made in two grades: No. 1 and No. 2. Masterseal No. 1 slightly darkens light colored surfaces, but is a permanent treatment. Masterseal No. 2 will not change the appearance of the lightest colored surface but may require retreating when climatic conditions are severe.

MERITS AND ADVANTAGES: Masterseal has the following advantages: (1) Prevents moisture absorption by exposed surfaces. (2) Prevents cracking and spalling of mortar joints, limestone, brick, stucco and concrete due to moisture seepage and subsequent freezing. (3) Protects masonry surfaces from corrosion by smoke and fume deposits from the atmosphere. (4) Prevents absorption of dust, soot and dirt by the surface pores of limestone, brick and concrete and consequently prevents staining due to this cause. (5) Does not discolor as it ages but remains in the same transparent condition as when first applied.

HOW USED: Masterseal should only be applied to masonry surfaces at temperatures above 50 degrees F. Surfaces should be warm and entirely free of moisture. Either sprayed or brushed on. One gallon of Masterseal will cover 125 to 150 square feet of average rough surface, one coat, or 75 to 100 square feet two coats.

► **SPECIFICATION:** The following areas (here insert specific areas) shall be waterproofed with Masterseal, (here state "No. 1" or "No. 2") applied according to the directions of the manufacturers, The Master Builders Company, Cleveland.

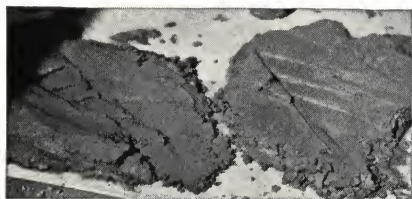


Advantages of BRIKRON



ARRESTS MORTAR JOINT EFFLORESCENCE—PROTECTS COLORS

Mortar joint efflorescence is caused by soluble salts being brought to the surface by moisture evaporation. The Omicron in Brikron arrests this action at its source by rendering salts highly insoluble. In addition, the powerful waterproofing stearate repels moisture and adds a second check to this action. This protects both brick work and the original color of joint. Left—Illustrating efflorescence. Right—Photomicrograph of soluble salt crystals.



MAKES BUTTERY MORTAR WITH LOW WATER/CEMENT RATIO

The main reason for mortar being so porous is that so much water is required for workability. The Omicron ingredient of Brikron makes a buttery mortar which spreads easier even when a low water cement ratio is used. For details and slump tests illustrating this point, see page 8 on Omicron.

Left: 1:3 mix, 10% Lime. Right: 1:3 mix with Brikron. Brikron mortar has all the plasticity of lime mortar without the disadvantages.



PROTECTS MORTAR JOINTS FROM DISINTEGRATION

Picture above—Example of Disintegration

Repointing mortar joints is expensive. Shrinkage; cracking and spalling from water and frost; deterioration from attacks of sulphurous smoke and fumes, salt air, etc., all are resisted by a Brikron joint due to action of Omicron on the soluble portion of the mortar and to the action of the stearate waterproofing.

WATERPROOFS—DENSIFIES

When water evaporates from mortar, its volume is replaced with tiny air cells called pores. A cubic yard may contain $1\frac{1}{2}$ cubic feet of pores interlaced so that capillary attraction sucks in water. Pores cannot be stopped up but Brikron will line each pore with a water repellent stearate and nullify capillary attraction. Omicron also assists by densifying and by reducing amount of water required.

TO ARREST *Efflorescence* AND *Waterproof* MASONRY MORTAR *specify* BRIKRON

FOREWORD—The subject of masonry mortar is one on which every individual in the construction industry appears to have his own opinion. All agree, however, on the desirability of checking percolation of moisture thru joints, of keeping joints of maximum strength, of encouraging good workmanship thru use of workable mixes and of preventing the appearance of efflorescence.

With the discovery of Omicron by Master Builders Research Laboratories a method is now available for obtaining all these qualities with Portland Cement mortar thru the use of a single product. This product is Brikron.

» **DESCRIPTION:** Brikron is a compound of Omicron and a powerful stearate waterproofing which, when added to masonry mortar in the proportion of one quart per bag of cement, gives the following advantages:

1. Minimizes mortar joint efflorescence.
2. Makes mortar plastic and buttery and yet permits use of lower water/cement ratios.
3. Adds substantially to early high strength as well as to permanent strength.
4. Protects joints from deterioration due to frost action and corrosion from smoke and fume deposits.
5. Protects mortar colors from clouding by lime salt action.
6. Waterproofs mortar joints.

» **OMICRON:** Omicron, one of the two basic ingredients of Brikron, is a discovery of Master Builders Research Laboratories and has the unique ability of forming new and permanent combinations with the waste products thrown off by portland cement during hydration. This action arrests the formation of efflorescence, contributes greatly increased plasticity, adds early high strength as well as permanent strength, densifies the mortar and makes the joint highly resistant to corrosion from acids and alkalis from the atmosphere. For complete details on Omicron see page 8.

» **THE WATERPROOFING INGREDIENT:** The waterproofing ingredient used in Brikron is of the powerful stearate type recommended by foremost authorities. It effectively waterproofs the mortar joints by lining each pore in the mortar (left by the evaporation of water) with a water-repellent coating. This nullifies capillary attraction and makes the joint water tight, protecting it from crazing due to alternate wetting and drying and frost action. The possibility of shrinkage cracks developing between brick and joint is also reduced as less gauging water (with less evaporation shrinkage) is required due to the plasticity added by Omicron.

SPECIFICATION:

All mortar for (here state "brick," "stone," "stucco," "plaster," etc.) shall consist of one part cement to three parts clean well graded sand free of organic matter and shall be tempered with water to which has been added one quart of Brikron per each bag of cement used, following the directions of the manufacturers, The Master Builders Company.

How Used—One quart of Brikron thrown into mixer for each bag of cement. Performs best with portland cement, although it is also effective with natural cements. 1:3 mix recommended. Up to 10% of lime may be used with the cement mix. Packed in 60, 35, 5, 1 gallon steel containers.

STRENGTH TEST

1:3 cement mortar	Comp. strength, lb. per sq. in.
	1 day 7 days 28 days
A. Untreated	445 2195 4548
B. With Brikron	764 2418 4676

WATERPROOFING TEST

1:3 mix, cement		% absorption water, by weight			
	1 hr.	4 hrs.	6 hrs.	48 hrs.	
A. Untreated	2.08	2.97	2.97	3.42	
B. With Brikron	.60	1.04	1.04	1.27*	
*Equilibrium—No further absorption on longer immersion.					



MASTER BUILDERS INTEGRAL WATERPROOFINGS

Concentrated Liquid . . . Paste . . . Powder . . .

Absorption Test Made for Prominent Architects,* Cincinnati, Ohio, by Independent Testing Laboratory

	Wt. dry, grams	Wt. after 12 hrs. immersion, grams	% of Absorption
M. B. Liquid	65.75	66.37	.95
A. A super cement	63.37	64.125	1.18
B. Well-known brand	62.5	64.0	2.4
C. Well-known brand	63.5	65.5	3.15
D. Void filling powder	58.75	60.875	3.62

*Name on request.

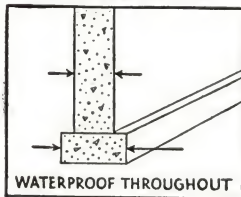
Absorption Test, Robt. W. Hunt Lab., Pittsburgh

Specimen.	Time 168 days	Increase in weight, grams	Increase % dry weight
Plain concrete—no waterproofing		11.2	1.13
Material "A"		6.65	.67
Material "B"		7.45	.785
Master Builders Waterproofing Powder		5.65	.585

Quantity Required Per Bag of Cement

Concentrated Liquid Waterproofing	2½ qt. per 94-lb. sack
Concentrated Paste Waterproofing	1½ lb. per 94-lb. sack
Concentrated Powder Waterproofing	2 lb. per 94-lb. sack

The Integral Method

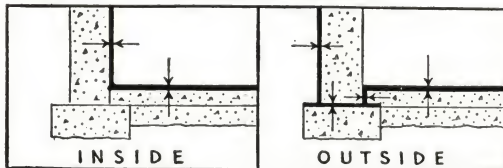


TWO METHODS

Sketch at left shows mass water-proofed throughout.

Lower left—Inside plaster coat method. Lower Right—Outside plaster coat method.

The Plaster Coat Method



» DESCRIPTION

Master Builders Concentrated Integral Waterproofings come in Liquid, Paste and Powder form. When mixed integrally with concrete, they line the pores with a water repellant stearate which changes capillary attraction into capillary repulsion, thus effectively holding out water.

» WHERE USED

Master Builders Concentrated Waterproofings are recommended for use in mass concrete and cement mortar of all kinds, including foundation walls, floor slabs, roof slabs, and all other forms of reinforced or plain concrete.

» MERITS AND ADVANTAGES

- (1) All three waterproofings are of the stearate type recognized and recommended by leading concrete authorities and building associations.
- (2) All three increase the workability of the concrete making it easy to place in and around specially shaped forms. In the case of plaster, the added plasticity furnishes ease in troweling.
- (3) With increased lubrication of a mix or mortar, excessive amounts of water need not be used. This results in less porosity and makes for watertightness.
- (4) Because Master Builders Waterproofings are concentrated, maximum results are obtained with a minimum amount of waterproofing.
- (5) Concentrated Liquid and Paste Waterproofing are exceptionally easy to use, it only being necessary for the mixer man to throw the proper amount of waterproofing into the mixer along with the gauging water. Where Waterproofing Powder is used, the aggregates and powder must be mixed dry for a half minute before water is added.

SPECIFICATION

All cement mortar (or concrete) as indicated shall be waterproofed throughout by the use of Master Builders Concentrated Waterproofing (here insert "Liquid," "Paste" or "Powder") following the directions of the manufacturers, THE MASTER BUILDERS COMPANY, Cleveland, Ohio.

A Few of the Prominent New York Buildings Waterproofed with Master Builders Products



- (1) Lord & Taylor's (2) Ambassador Hotel (3) Pershing Square Building (4) Equitable Building (5) Federal Reserve Bank of New York (6) Farmers' Loan & Trust Co.
 (7) Commodore Hotel (8) Saks Fifth Ave. Store (9) N. Y. Stock Exchange (10) Pennsylvania Hotel (11) B. F. Keith's Theatre



METALLIC WATERPROOFING

Master Builders Iron Method

THE Master Builders Metallic (Iron) method of waterproofing masonry consists of the application of a watertight metal-cement sheath to the masonry surface. This metal-cement sheath is built upon a masonry wall by either plastering or applying in successive brush coats, a mixture of Master Builders Metallic Waterproofing, portland cement and sand tempered with water.

WATERPROOF THROUGH OXIDATION: Master Builders Metallic Waterproofing will expand many times its original size through oxidation. When mixed with sand, cement and water and applied to masonry surfaces, the metallic aggregate oxidizes and swells, filling the voids left by the water when it evaporates. This provides a metal-cement surface that is watertight even under extremes of pressure.

CHEMICALLY PURE: Perfected by and manufactured under the close supervision of Master Builders Research Laboratories, Master Builders Metallic Waterproofing is chemically pure. It consists of metallic aggregate, processed free of oil, grease and non-ferrous metals and so treated that it will quickly react and oxidize properly without the formation of harmful gas bubbles.

WHERE USED: Master Builders Metallic Waterproofing Method may be used on practically all masonry areas. It may be applied to the exterior and interior surfaces of walls, over footings and floor slabs of basements, tunnels, ducts, vaults, subways, swimming pools, reservoirs, storage tanks, etc. It may be applied to the ground side of retaining walls and upstream side of dams.

HOW USED: On concrete surfaces, successive brush coats of Metallic Waterproofing mixed with sand, cement and water are applied. From two to five coats required depending on the amount of water pressure encountered. On surfaces of unglazed brick, hollow tile, cement block or stone, Metallic Waterproofing and water is applied, followed by a thin coat of cement plaster. This is then followed by successive brush coats of Metallic Waterproofing, cement, sand and water. Calculate two brush coats of Metallic Waterproofing as minimum for all surfaces. Approximately 15 pounds required for a two coat treatment on 100 sq. ft. Packed in 50 and 100 lb. drums. Detailed instructions supplied with each order.

► **SPECIFICATION:** The following areas shall be waterproofed with Master Builders Metallic Waterproofing Method (here insert areas). The Metallic Waterproofing shall be applied according to the detailed directions of the manufacturers, The Master Builders Co., Cleveland.

PLASTER BOND

MASTER Builders Plaster Bond is a high grade Mexican Asphalt of a brushing and spraying consistency that makes possible the practical application of plaster direct to the interior surface of exterior walls. Plaster Bond serves these four purposes: (1) It lines interior surfaces of exterior walls with a watertight asphalt curtain that prevents infiltration

of moisture and dampness. (2) It helps shut out cold and retain heat. (3) It provides a tacky, elastic surface to which plaster will adhere firmly. (4) It makes possible the elimination of furring and lathing.

ELASTICITY RETAINED: Being a natural asphalt of highest quality without adulteration by useless fillers Master Builders Plaster Bond retains its elasticity indefinitely which permits it to expand and contract with the masonry surface without cracking.

OTHER USES: Although primarily designed to make possible the practical application of plaster direct to interior surfaces of exterior walls, Plaster Bond serves in other capacities: (1) Used to dampproof exterior walls and prevent moisture from following the furring and staining plaster or warping lath. (2) Used as a rustproof paint on metal lath. (3) Used as a stone backing paint preventing staining and discoloration of light colored stone by moisture from back-up mortar and joints. (4) Used as waterproofing for back of parapet walls. (5) Used as a protective coating for unexposed parts of wood, window and door frames where they come in contact with masonry, thus preventing cracking and warping of wood from this cause. (6) Used as a protective coating for metal surfaces exposed to water, moisture or fume laden air.

HOW USED: Plaster Bond is applied in a two coat treatment. Either sprayed or brushed on. One gallon will cover 80 square feet two coats. Packed in 60 and 35 gallon barrels and 5 gallon cans. Weight—8½ pounds per gallon.

NOTE: Plaster Bond should not be used with portland cement plaster—only with light weight plasters such as lime, gypsum, etc. When applied to concrete, latter should be rough to provide key. Specify integral or metallic waterproofings where portland cement plaster is to be used.

► **SPECIFICATION:** The interior surfaces of all exterior walls shall be given a two coat treatment of Master Builders Plaster Bond applied in a continuous coating and following the directions of the manufacturer.

FOUNDATION COATING

MASTER Builders Foundation Coating is a high grade Mexican asphalt of a brushing and spraying consistency suitable for application to exterior surfaces of foundation walls to make them dampproof. It is of the same quality asphalt as Master Builders Plaster Bond but does not possess the tackiness of this latter material.

ELASTICITY RETAINED: Like Master Builders Plaster Bond, Foundation Coating retains its elasticity indefinitely due to its freedom from fillers and other adulterants that would dry out and make the film brittle.

HOW USED: One gallon will cover 100 square feet of average surface one coat or 70 square feet two coats. Foundation coating may be brushed or sprayed on. Packaged in 60 and 35 gallon barrels, 5 and 1 gallon cans.

► **SPECIFICATION:** Exterior surface of foundation walls shall be given two coats of Master Builders Foundation coating applied in accordance with the manufacturers' directions.



Some Prominent Installations



Carew Tower
Cincinnati, Ohio
Walter Ahlschlager, Inc.,
Architect



Severance Hall
Cleveland, Ohio
Walker & Weeks,
Architects



Statler Hotel Building
Buffalo, New York
Geo. B. Post & Sons, Architects



International Shoe Building
St. Louis, Mo.
H. Reinhardt, Architect

"MASTERBUILT FLOORS PAY FOR THEMSELVES EVERY THREE YEARS"

{ The following reports were given by owners of Masterbuilt Floors to independent investigators of the H. P. Gould Co., Chicago }

Northwestern Terra Cotta Co., Chicago—"In 1913, we resurfaced the aisleway with Masterbuilt Floors. That surface is still in good condition despite an increasing volume of traffic. The saving in maintenance (as compared to the previous unhardened floor) has paid for the Masterbuilt Floor five times over. With this experience, it was only natural that we should lay Masterbuilt Floors in our buildings 27 and 28 when they were erected in 1920. Since installation we have not spent \$10 in repairs on these Masterbuilt Floors and the surface is perfectly smooth. We have every reason to believe that the floors will last many years more."

Richman Brothers Co., Cleveland: "In 1916, after investigating all kinds and methods of floor building, we laid a third of our total floor space—or over 100,000 sq. ft.—with Masterbuilt Floors. In 1920 we made certain minor additions. Some of these floors were not Masterbuilt Floors. Although four years newer than the Masterbuilt Floors these other floors are not standing up—especially a shipping platform subject to the same heavy trucking as the Masterbuilt Floors. Judging by this comparison, if our present Masterbuilt Floors had been laid in the same manner as the shipping platform, at least 50 per cent of them would have required repair or replacement by this time. At a cost of 20c a square foot, replacing 50,000 sq. ft. would cost \$10,000.00. As the original extra cost of the Masterbuilt Floor was only \$2,680.00, this gives us a saving of over \$7,000.00 which has paid for the Masterbuilt Floors three times over. Our Masterbuilt Floors are still in excellent condition and are good for many years more of service."

PARTIAL LIST OF INSTALLATIONS

Merchandise Mart, Chicago. Graham, Anderson, Probst & White. 5,000,000 sq. ft. Masterbuilt Floors.
Starrett-Lehigh Bldg., N. Y. C. R. G. & W. M. Cory. 1,200,000 sq. ft. Metalicron Floors.
Goodyear Zeppelin Hangar, Akron. Wilbur Watson & Assoc. Masterbuilt Floors throughout.
McGraw-Hill Bldg., N. Y. C. Hood, Godley & Fouloux. 225,000 sq. ft. Metalicron.
Union Terminal Bldgs., Cleve. Graham, Anderson, Probst & White. Master Mix Floors and Metalicron Floors.
Titcher-Goettinger Bldg., Dallas. Herbert H. Greene, La Roche & Dahl. 70,000 sq. ft. Metalicron.
Atlantic City Auditorium, Atlantic City, N. J. 100,000 sq. ft. Dycrome.
New York Central Bldg., N. Y. Warren & Wetmore. 1,000,000 sq. ft. Master Mix Floors and Brick Mortar Waterproofing.
County Court House, Milwaukee. A. R. Ross. 1,000,000 sq. ft. of Metalicron and colored Metalicron Floors.
Boston Consolidated Gas Co., Boston. D. S. Reynolds. 180,000 sq. ft. Masterbuilt Floors.
Louderman Bldg., St. Louis. LaBeaume & Klein. Masterbuilt Floors throughout.
Rikers Island Penitentiary, Rikers Island, N. Y. Sloan & Robertson. 450,000 sq. ft. Non-Slip Metalicron.
National Carbon Co., Cleveland. Private Plans. 200,000 sq. ft. Masterbuilt Floors.
International Shoe Co., St. Louis. H. Reinhardt. Metalicron Floors throughout.
Lippincott Bldg., Phila. Mahlon Dickinson. 100,000 sq. ft. Masterbuilt Floors.
Union Station, Chicago. Graham, Anderson, Probst & White. Masterbuilt Floors throughout building.
Pershing Square Bldg., N. Y. C. Yorke & Sawyer. Brick Mortar Waterproofing throughout.
Willys-Overland Plant, Los Angeles. Corlett & Bulman. 265,000 sq. ft. Masterbuilt Floors.

Firestone Tire & Rubber Co., Los Angeles. Corlett & Bulman. 265,000 sq. ft. Masterbuilt Floors.
John Wanamaker Store, N. Y. C. Private Plans. 100,000 sq. ft. Colored Masterbuilt Floors.
Chrysler Bldg., N. Y. C. W. Van Alen. Colored Masterbuilt Floors in all service areas. Mortar Waterproofing.
Minneapolis Heat Reg. Co., Minneapolis. 1,050,000 sq. ft. Masterbuilt Floors.
Viscose Co., Parkersburg, W. Va. Ballinger Co. 370,000 sq. ft. Metalicron Floors. 900 cu. yds. Waterproofing.
Almar Stores Warehouse, Phila. Ballinger Co. 100,056 sq. ft. Metalicron Floors.
J. C. Penny Warehouse, St. Louis. T. P. Barnett. 800,000 sq. ft. Masterbuilt Floors.
Wyman Partridge Co., Minneapolis. Bartrand & Chamberlain. 360,000 sq. ft. Masterbuilt Floors.
Hospital for Joint Diseases, N. Y. C. Buchman & Kahn. 100,000 sq. ft. Colored Masterbuilt Floors.
Severance Symphony Hall, Cleveland. Walker & Weeks. 15,000 sq. ft. Dycrome Floors.
City Hall, Atlanta. G. Lloyd Preacher. Colored Masterbuilt Floors.
Field Museum, Chicago. Graham, Anderson, Probst & White. 500,000 sq. ft. Master Mix Floors.
Chevrolet Motor Car Co., Buffalo. 210,000 sq. ft. Metalicron.
Paige-Detroit Motor Co., Detroit. 100,000 sq. ft. Masterbuilt Floors.
Sears Roebuck Co., Retail Stores. Throughout country. Colored Masterbuilt Floors.
Montgomery Ward & Co., Retail Stores throughout country. Colored Masterbuilt Floors.
Statler Hotel, Buffalo. Geo. B. Post Sons. Brick Mortar Waterproofing throughout.
Ambassador Theatre and Office Bldg., St. Louis. Rapp & Rapp. 120,000 sq. ft. Master Mix Floors.
Illinois Merchants Bank, Chicago. Rapp & Rapp. 200,000 sq. ft. Master Mix Floors.
Baldwin Locomotive Works, Eddystone, Pa. Private Plans. 200,000 sq. ft. Masterbuilt Floors.

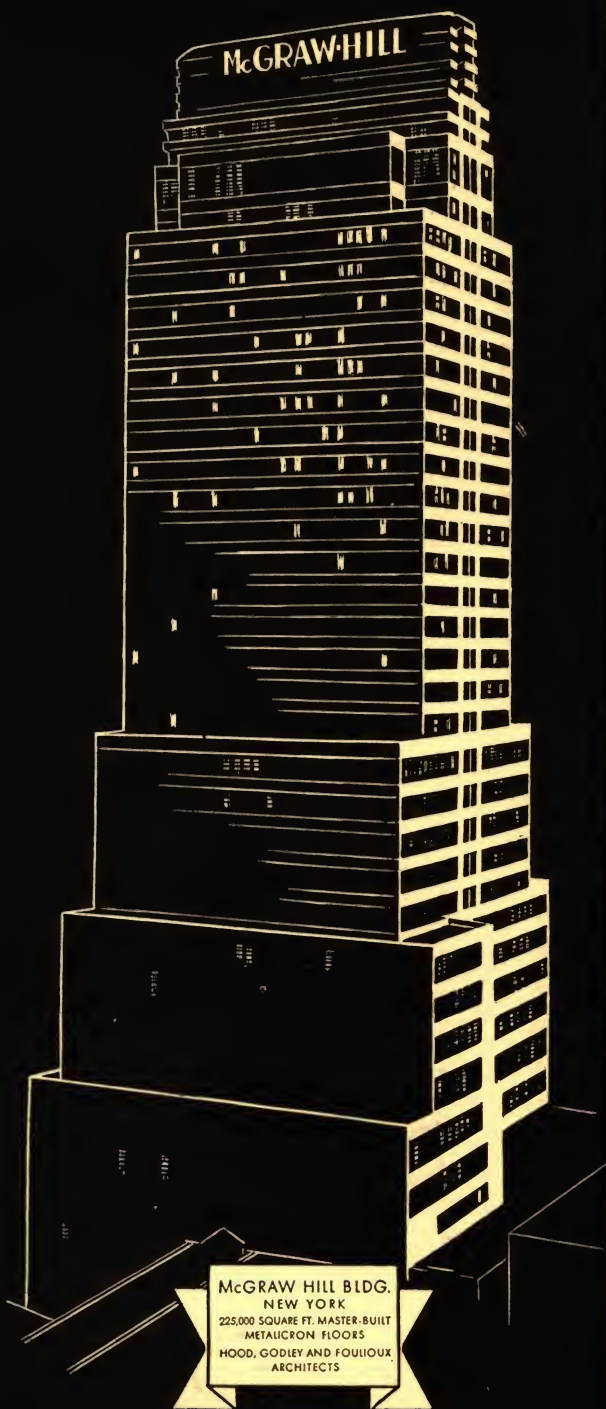


Field Museum
Chicago, Illinois
Graham, Anderson, Probst &
White, Architects



Presbyterian Hospital
New York City
James Gamble Rogers,
Architect





McGRAW HILL BLDG.
NEW YORK
225,000 SQUARE FT. MASTER-BUILT
METALICRON FLOORS
HOOD, GODLEY AND FOULIOUX
ARCHITECTS

CONCRETE FLOOR HARDNERS

CONCRETE WATERPROOFINGS

ALLIED TECHNICAL PRODUCTS



BRANCH OFFICES:

ATLANTA	625 Walton Bldg.	MILWAUKEE	774 Broadway
BOSTON	80 Boylston St.	MINNEAPOLIS	434 Builders Exchange
BUFFALO	203 McKinley Bldg.	NEW YORK	441 Lexington Ave.
CHICAGO	228 No. LaSalle St.	PHILADELPHIA	1105 Otis Bldg.
DALLAS	613 Construction Bldg.	PITTSBURGH	422 Fulton Bldg.
DENVER	California Bldg.	PORTLAND	61 Albina Ave.
DETROIT	606 Michigan Theatre Bldg.	ST. LOUIS	Star Bldg.
HELENA	Power Block Annex	SALT LAKE CITY	211 Kearns Bldg.
HOUSTON	1008 Post Dispatch Bldg.	SAN ANTONIO	303 Builders Exchange
INDIANAPOLIS	1021 Hume Mansur Bldg.	SAN FRANCISCO	206 Mills Bldg.
KANSAS CITY	419 Gloyd Bldg.	SEATTLE	314 Seneca St.
LOS ANGELES	1321 Comm'l Exchange Bldg.	WASHINGTON, D. C.	726 Investment Bldg.

The
MASTER BUILDERS CO.
Cleveland, Ohio